Studies on Np(V) hydrolysis at variable temperatures

Thandankorai,G Srinivasan, Linfeng Rao, and Alexander Yu. Garnov, Glenn T. Seaborg Center, Chemical Sciences Division, Lawrence Berkeley National Laboratory, 1Cyclotron Road, MS70A-1150, Berkeley, CA 94720, Fax: 510 486 5596, tgsrinivasan@lbl.gov

Information on the hydrolysis of Np(V) in the literature is scarce and highly scattered. For example, the first hydrolysis constant at 25 ^{o}C differs by more than two orders of magnitude. Only one paper has reported the enthalpy of Np(V) hydrolysis at 25 ^{o}C. There have been no studies of Np(V) hydrolysis at variable temperatures. In the present work, the hydrolysis of Np(V) in 1M tetramethylammonium chloride was studied at variable temperatures (10 ^{o}C to 85 ^{o}C) by potentiometry and calorimetry. Hydrolysis constants and enthalpy of hydrolysis at six different temperatures were obtained. These data provide valuable tools for the prediction of the migration behavior of Np(V) in the environment.